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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,238	01/26/2004	Jun Hirose	247640US3 CONT	6690

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
11/30/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/763,238	HIROSE ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 11, 2007 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 22 recites the limitation "the steps". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 16, 17, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) in view of Osaka et al (JP11-037315). Welch teaches a deposit shield (50; Figure 3B; "chamber liner") arranged in a vacuum processing

chamber (24; Figure 1; column 4; lines 10-21) in which plasma processing is to be performed on a substrate to be processed, and covering an inner side surface of the vacuum processing chamber (24; Figure 1; column 4; lines 10-21) to inhibit the inner side surface from being exposed to plasma, the deposit shield (50; Figure 3B; "chamber liner") comprising: an inner surface (plasma facing surface of 50; Figure 3B; "chamber liner") formed into a smooth curved side surface; a notch portion (94,96; Figure 9,10) formed to face a gate (222; Figure 9/10) via which the substrate to be processed is loaded or unloaded; a shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) formed to match the notch portion (94,96; Figure 9,10) and make a same curved surface as the curved side surface; a raising/lowering portion (all elements except 60; Figure 6) which raises/lowers the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10); an inner surface (plasma facing surface of 50; Figure 3B; "chamber liner") of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) and the inner surface (plasma facing surface of 50; Figure 3B; "chamber liner") of the deposit shield (50; Figure 3B; "chamber liner") make a similar curved surface so that the inner surfaces (plasma facing surface of 50; Figure 3B; "chamber liner") are formed on a same plane, whereby a uniformity in density of plasma generated in the plasma processing is maintained – claim 16

Welch further teaches:

i. The deposit shield (50; Figure 3B; "chamber liner") according to claim 16, wherein: a cut end portion (terminating arms of 94,96; Figure 9,10) of the notch portion (94,96; Figure 9,10) and the end surface of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) have respective L-shaped step portions (L-shape of 94,96;

Figure 9,10) which are fitted to each other; an inner peripheral portion of the L-shaped step portion of the cut end portion (terminating arms of 94,96; Figure 9,10) of the notch portion (94,96; Figure 9,10) extends, and an outer portion part of the L-shaped step portion of the end face of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) extends; and plasma generated in the processing chamber is prevented from leaking between the notch portion (94,96; Figure 9,10) and the end face of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), as claimed by claim 20

ii. The deposit shield (50; Figure 3B; "chamber liner") according to Claim 16, wherein a cut end portion (terminating arms of 94,96; Figure 9,10) of the notch portion (94,96; Figure 9,10) and the end surface of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) have respective complimentary step portions, as claimed by claim 22

Welch does not teach:

i. an O-ring fitted in an inner surface (plasma facing surface of 50; Figure 3B; "chamber liner") side of an end surface of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) that meets facing the notch portion (94,96; Figure 9,10); and a spiral seal fitted in an outer surface side thereof; wherein when the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) matches the notch portion (94,96; Figure 9,10) – claim 16

ii. The deposit shield (50; Figure 3B; "chamber liner") according to claim 16, wherein the spiral seal electrically connects the deposit shield (50; Figure 3B; "chamber liner") and

the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) to each other at a same ground potential, thereby preventing the plasma from detouring around to an outside of the deposit shield (50; Figure 3B; "chamber liner") from a gap between the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) and the notch portion (94,96; Figure 9,10) that meet, and the O-ring prevents particles generated from the spiral seal from scattering towards an inner side of the deposit shield (50; Figure 3B; "chamber liner"), as claimed by claim 17

iii. The deposit shield (50; Figure 3B; "chamber liner") according to Claim 16, wherein the end surface of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) configured to hold the O-ring is substantially perpendicular to the inner surface (plasma facing surface of 50; Figure 3B; "chamber liner") of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), as claimed by claim 21

iv. The deposit shield (50; Figure 3B; "chamber liner") according to Claim 22, wherein each of the steps includes a plurality of portions substantially perpendicular to the inner surfaces (plasma facing surface of 50; Figure 3B; "chamber liner") of the deposit shield (50; Figure 3B; "chamber liner") and shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), and wherein each of the steps further includes a portion substantially parallel to the inner surfaces (plasma facing surface of 50; Figure 3B; "chamber liner") of the deposit shield (50; Figure 3B; "chamber liner") and shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), whereby plasma generated in the processing chamber is prevented from leaking between the notch portion

(94,96; Figure 9,10) and the end face of the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), as claimed by claim 23

Osaka teaches a gate valve shutter (32) with a groove (32/33 contour; Figure 2, 5) for fitting an o-ring (33 – see corresponding element on the other side of 32). The groove is shown to have a cross section having a square outer periphery.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Welch to add shape-compliant grooves around Welch's shutter to thereby accommodate an O-ring as taught by Osaka, further, to reproduce Welche's

Motivation for Welch to add shape-compliant grooves around Welch's shutter to thereby accommodate an O-ring as taught by Osaka is to provide for a better hermetic seal between Welch's gate valve and seat therefore as taught by Osaka ("[Description of the Prior ART]"; Machine Translation). It is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) and Osaka et al (JP11-037315) in view of Hamrah et al (USPat. 5,242,538). Welch, and Osaka are discussed above. Welch, and Osaka do not teach:

i. a disk-like exhaust plate arranged around the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10), wherein when the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) is raised, the shutter (60; Figure 2; column 4; lines 22-40; not numbered in Figure 9,10) of the deposit shield (50; Figure 3B; "chamber liner") and the exhaust plate are brought into contact to each other to be electrically connected to each other, as claimed by claim 18

Hamrah teaches a similar plasma processing apparatus (Figure 2) including a disk-shaped evacuation plate (96; Figure 2; column 3, lines 14-29) disposed around the stage (70).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a disk-shaped evacuation plate disposed around Welch's support stage as taught by Hamrah.

Motivation to add a disk-shaped evacuation plate disposed around Welch's support stage is to direct exhaust flow as taught by Hamrah (column 3, lines 14-29).

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) and Osaka et al (JP11-037315) in view of Steger et al (USPat. 5,788,799). Welch and Osaka are discussed above. Welch and Osaka do not teach the deposit shield (50; Figure 3B; "chamber liner") according to claim 11, wherein the deposit shield (50; Figure 3B; "chamber liner") and the shutter (60; Figure 2; column 4; lines 22-40) include respective heating mechanisms, as claimed by claim 19

Steger teaches a similar plasma apparatus (Figure 1) including a chamber liner (102; column 6, lines 18-29) comprising a heating mechanism (110, Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a heater in Welch's liner as taught by Steger.

Motivation to add a heater in Welch's liner as taught by Steger is to provide for thermal protection of the liner (column 6, lines 18-29).

Response to Arguments

9. Applicant's arguments with respect to claims 16-23 have been considered but are moot in view of the new grounds of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.